BARNYARDS & BACKYARDS

July 2015

UNIVERSITY OF WYOMING

UNIVERSITY OF WYOMING EXTENSION Agriculture & Horticulture | USDA | RMA

UW EXTENSION | AGRICULTURE & HORTICULTURE | USDA | RISK MANAGEMENT AGENCY

Goshen County farm example shows late planting options

An earlier installment outlined an example Goshen County farm whose operators were unable to plant 100 acres of corn by the final planting date of May 25 due to immense rainfall that month.

The owners carry a Revenue Protection (RP) policy on their corn and have an Actual Production History (APH) yield of 150 bushels/acre.

The farm's operators estimate the earliest possible date to resume planting would be June 5.

Remember, if crop acreage is planted in the late planting period, there is a 1 percent-per-day deduction from the production guarantee level until the crop is planted.

For more information

Any potential prevented planting situations should be reported promptly to a crop insurance agent. Late planting deadlines are typically 25 days following the final planting date for full guarantee.

Check with a crop insurance agent for details regarding specific areas and the crop involved. Visit RightRisk.org for more information on prevented planting and other important crop insurance programs. RightRisk.org has numerous risk management resources to assist in decision-making for late planting decisions.

Alternatives for Prevented Planting

Our example farm operators have several alternatives when facing prevented planting on their corn: If they choose to plant corn, they can wait as late as June 5 and plant corn in the late planting period, resulting in a yield guarantee reduction of 15 bushels (1 percent, times 10 days, times 150 bushels, subtracted from the APH yield of 150 bushels/acre).

If we assume the projected harvest price is $3.50/bushel at 80 percent coverage, the resulting reduction of 12 bushels/acre results in a reduction of insurable revenue of $42/acre (12 bushels times the projected price of $3.50/bushel). The corn crop is not eligible for any type of insurance coverage if they are unable to plant until after the end of the late planting period.

If the operators decide a June 5 or later planting date is too late for corn to make an acceptable yield, another option is to decide not to plant corn. This opens up other choices. They could leave the acreage idle or plant a cover crop and collect a prevented planting payment of 70 percent of their production guarantee; in this case, a guarantee of 120 bushels at $3.50/bushel or $420/acre. The resulting payment would be $294/acre.

Table 1. Prevented Planting Alternatives for Goshen County Corn

	Guarantee reduction	Per acre guarantee	Prevented plant payment
Total Guarantee Before Prevented Planting: $420/Ac			
Plant corn: on or before June 5	$42.00	$378.00	-
Full payment: cover crop	$126.00	-	$294.00
Reduced payment: cover crop	$317.10	-	$102.90

Were they to choose to plant a cover crop, they must not hay or graze the crop until November 1 or the prevented planting payment will be reduced to 35 percent of the full amount ($102.90/acre). The decision to use the cover crop or leave it until November hinges on the cost of planting the cover crop and the value of the forage if it is hayed or grazed. To hay or graze the cover crop and break-even, as compared with the full payment of $294/acre, the cover crop must be worth at least $191.10 per acre, plus the expenses associated with establishing the cover crop. Results are summarized in Table 1.

The reduction in the guarantee level and whether or not the late-planted crop will generate a return high enough to cover planting costs are the main risks associated with planting late. Where the prevented planting payment provides revenue adequate to cover planting costs, then any cover crop revenue earned could be viewed as a bonus.

James Sedman *is a consultant to the Department of Agricultural and Applied Economics in the University of Wyoming College of Agriculture and Natural Resources, and* **John Hewlett** *is a farm and ranch management specialist in the department. Hewlett may be reached at (307) 766-2166 or hewlett@uwyo.edu.*

Understanding how carbon dynamics affect soil

Carbon is an often overlooked but very important component of the soil, and the impacts of carbon loss can be slow to manifest.

While we know how to manage nitrogen (N), phosphorus (P), and potassium (K) for optimum yield, soil carbon is more challenging to manage.

Soil health is the capacity of a soil to function in terms of biological productivity, environmental quality, and plant and animal health. It is also one of the best indicators of long-term sustainability in land management.

Carbon Status Important

Soil carbon status is one of the most important factors in soil health and our best opportunity for improvement.

Soil organic matter (SOM) includes all organic components of the soil system: living and dead plant and animal tissue, excretions, and microbes. While only a small percentage of the soil (less than 3 percent in most Wyoming agricultural soils), it is very important for soil health, disease suppression, drought resistance, water quality and quantity, and long-term agricultural viability. It's what gives healthy soil it's dark brown color and rich, earthy smell.

Carbon is the primary component of SOM, accounting for approximately half. It is only the *organic* soil carbon that is of interest when managing for soil health – it was once a part of a living organism, and will be again. In contrast *inorganic* soil carbon includes charcoal and lime and does not provide the same benefits to soil health.

Microbes at Work

Nitrogen and many other nutrients in SOM are not available to plants until soil microbes break down the complex carbon-based molecules like cellulose and protein.

The microbes responsible for the most rapid organic matter decomposition are aerobic (require oxygen). Tillage introduces oxygen into the soil, stimulating microbial activity. This burst of activity leads to increased metabolism of SOM and subsequent loss of soil carbon as carbon dioxide. Tillage is a major contributor to soil carbon loss and declining soil health.

There are three pools of soil carbon.

- **Active:** this pool includes living organisms, crop residues, and manures. It turns over in seasons to years as soil microbes break it down, and nutrient release is relatively rapid. It is a major contributor to soil structural stability (resisting erosion and compaction). Changes in tillage practices and cropping systems have the biggest effect on this pool.
- **Slow:** this pool turns over in decades as carbon moves from the active pool to the passive pool. It is especially valuable for its slow release of nitrogen and micronutrients.
- **Passive:** this pool turns over in hundreds to thousands of years. It is very stable and physically protected from soil microbes in organic-clay complexes. It includes humus, which promotes root development and plant growth, and is the major contributor to cation exchange capacity and water holding capacity of the soil. It is very slow to change and primarily lost through wind and water erosion of topsoil.

Think of these pools as a checking account, savings account, and retirement plan. You can add to these "accounts" by adding manure and compost and by planting soil-building crops. Reducing tillage, leaving crop residues in the field, and protecting the soil from erosion can minimize losses.

Many soil functions are directly or indirectly affected by soil carbon.

1. Soil microbial activity – plant nutrient availability, degradation of pollutants, and disease suppression.
2. Soil structure – water infiltration, rooting depth, resistance to erosion and compaction, and oxygen availability for roots and microbes.
3. Water-holding capacity – drought resistance and water storage.
4. Crop quality and yield – disease resistance, seed germination, root development, and micronutrient and phosphorus availability.

One can learn a lot about soil carbon status by digging a hole and noting the color, smell, and structure of the soil. A soil with more carbon will be darker in color, have a more earthy smell and better tilth. Compare soil from a cultivated field to soil from a pasture or fencerow. Observing and recording changes in color, smell, and structure over time can tell you a lot about the effects of current management on soil health and carbon status.

As you manage soil N, P, and K for maximum crop production, consider ways to manage C, too. The long-term benefits will be well worth the investment.

For resources on monitoring and managing soil fertility and soil carbon, contact the author or your local UW Extension educator. A longer version of this article is available at www.uwyoextension.org/drcaitlin.

Caitlin Youngquist *is a University of Wyoming Extension educator serving northwest Wyoming and can be reached at (307) 347-3431 or at cyoungqu@uwyo.edu.*